

Panaji, 12th February, 1976 (Magha 23, 1897)

SERIES I No. 46

OFFICIAL GAZETTE



GOVERNMENT OF GOA, DAMAN AND DIU

GOVERNMENT OF GOA, DAMAN AND DIU

Special Department

Corrigendum

1-43(1)/74-SPL

In the schedule attached to the Notification of even number dated 28th August, 1975 published in the Official Gazette Series I No. 32, dated 6th November, 1975 relating to Goa Government Directorate of Archives Class III (non-ministerial non-Gazetted) and Class IV posts Recruitment Rules 1975 the following correction may be made:—

1. Against the post of Foreman (Senior Binder) the existing entry in Column 4 may be corrected to read as:—

“Rs. 320-6-326-8-390-10-400”.

M. K. Bhandare, Deputy Secretary (Appointments).

Panaji, 3rd February, 1976.

Home Department (Transport and Accommodation)

Notification

HD(TA-Tpt)/11-55/74

In exercise of the powers conferred by sub-section (1) of section 43 of the Motor Vehicles Act, 1939 (4 of 1939) as extended to the Union territory of Goa, Daman and Diu and all other powers enabling him in this behalf, the Lieutenant Governor of Goa, Daman and Diu proposes to issue the following draft notification set out below regarding fixing of fares for autorickshaws plying in the Union territory of Goa, Daman and Diu.

2. All members of the public, who may be interested to offer any suggestions or objections on the said draft notification, may forward the same to the Chief Secretary to the Government of Goa, Daman and Diu, Secretariat, Panaji within a period of thirty days from the date of publication of this notification in the Official Gazette, so that they may be taken into consideration at the time of finalisation of the said draft.

3. The draft notification will be taken into consideration by the Government on or after 15-3-1975.

DRAFT NOTIFICATION

In exercise of the powers conferred by sub-section (1) of section 43 of the Motor Vehicles Act, 1939 (4 of 1939) as extended to the Union territory of Goa, Daman and Diu and all other powers enabling him in this behalf regarding fixing of fares for contract carriages operating in the Union territory of Goa, Daman and Diu, the Lieutenant Governor of Goa, Daman and Diu hereby directs the State Transport Authority, Panaji, that the maximum fares chargeable by autorickshaws in the Union territory of Goa, Daman and Diu shall be as mentioned below:—

- | | |
|---|---|
| (a) For the first kilometre ... | Re. 1.00 |
| (b) For the subsequent distance per kilometre | Re. 0.50 |
| (c) Waiting charges | Re. 0.10 for every 4 minutes. |
| (d) Luggage charges | Not exceeding ten paise for every article weighing upto 10 kgs. |

This supersedes clause D of the Government Notification No. HD(TA-Tpt)/8-3/74 dated 7/9/1974, published in the Official Gazette Series I, No. 24 dated 12/9/1974.

By order and in the name of the Lieutenant Governor of Goa, Daman and Diu.

G. M. Sardesai, Under Secretary (Home).

Panaji, 11th February, 1976.

Law and Judiciary Department

Notification

LD/4467/75

The following notifications received from the Government of India, Ministry of Industry & Civil Supplies New Delhi, are hereby republished for general information of the public.

M. S. Borkar, Under Secretary (Law).

Panaji, 10th November, 1975.

GOVERNMENT OF INDIA

MINISTRY OF INDUSTRY AND CIVIL SUPPLIES

(Department of Industrial Development)

Central Boilers Board

New Delhi, the 17th April, 75

G. S. R. — The following draft of certain regulations further to amend the Indian Boiler Regulations, 1950, which the Central Boilers Board proposes to make in exercise of the powers conferred by section 28 of the Indian Boilers Act, 1923 (5 of 1923), is published as required by sub-section (1) of section 31 of the said Act, for the information of all persons likely to be affected thereby, and notice is hereby given that the said draft will be taken into consideration after the expiry of three months from the date of publication of this notification in the Official Gazette.

Any objections or suggestions which may be received from any person with respect to the said draft within the period so specified will be considered by the Central Boilers Board. Such objections or suggestions should be addressed to the Secretary, Central Boilers Board, Ministry of Industry and Civil Supplies (Deptt. of Ind. Dev.), Udyog Bhavan, New Delhi.

DRAFT REGULATIONS

1. These Regulations may be called the Indian Boiler (Amendment) Regulations, 1975.

2. In the Indian Boiler Regulations, 1950, in Appendix — C, in the list of "Inspecting Authority" recognised as competent under regulations 2(g), the following shall be added at the end namely:—

"76 — M/s. Commercial Union Assurance Company Limited, P. O. Box 232, Pombroke House, 40, City Road, London EC II P IEE".

(F. No. 8(15)/73 — Boiler)

Sd/-

(S. C. DEY)

Secretary, Central Boilers Board.

New Delhi, dated 22nd September, 1975

Notification

G. S. R. Whereas certain draft regulations further to amend the Indian Boiler Regulations 1950 were published as required by sub-section (1) of Section 31 of the Indian Boilers Act, 1923 (5 of 1923) at page 2884 to 1892 of the Gazette of India, Part II section 3, sub-section (i) dated the 30th September, 1972, with the notification of the Government of India, in the Late Ministry of Industrial Development (Central Boilers Board) No.G. S. R. 1223 dated the 3rd August 1972 inviting objections and suggestions from all persons likely to be affected thereby till the 30th December, 1972;

And Whereas the said Gazette was made available to the public on the 26th October, 1972.

And Whereas objections or suggestions have been received and considered by the Board.

Now Therefore, in exercise of the powers conferred by section 28 of the Indian Boilers Act, 1923 (5 of 1923) the Central Boilers Board hereby makes the following regulations further to amend the Indian Boiler Regulations, 1950, namely:—

DRAFT NOTIFICATIONS

1. (1) These regulations may be called the Indian Boiler (Third Amendment) Regulation, 1975.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In Chapter II of the Indian Boiler Regulations 1950 (hereinafter referred to as the said regulations) for the heading, the following heading shall be substituted, namely:—

"Steel Plates, Rivets, Section and Bars in Carbon Steel".

3. For regulation 9 of the said regulations, the following regulation shall be substituted namely:—

"9 Process of manufacture — (a) Steel for plates shall be made by the open hearth, electric furnace of basic oxygen process or any other process which gives steel having equivalent specified properties.

(b) General De-oxidation practice shall be appropriate to the type of the steel used, particularly where the deoxidation practice influence the level of the elevated temperature properties of Steel.

(c) Rimmed steels may be permitted only for riveted drums or sheels made of plates having a nominal thickness upto 20 mm.

(d) Plates of Carbon steel shall conform to one of the following four grades of tensile strength, namely:—

(i) 37 to 45 Kgf/mm²

(ii) 42 to 50 Kgf/mm²

(iii) 47 to 56 Kgf/mm²

(iv) 52 to 62 Kgf/mm²

4. In regulation 10 of the said regulations, after clause (c), the following clause shall be inserted, namely:—

"(d) Plates not intended for hot forming shall be supplied in the normalised conditions unless otherwise agreed upon between the boiler manufacturer and the Inspecting Authority. Normalizing may be omitted if it is demonstrated that equivalent properties can be produced by the rolling and subsequent cooling.

Note. — The boiler manufacturer may, if he so wishes order a chekc analysis".

5. For regulation 11 of the said regulations, the following regulation shall be substituted, namely:—

"11. Freedom from defects, etc. — Minor surface defects of the plates may be removed by mechanical means to achieve a smooth level surface provided that the minimum specified thickness is maintained. Surface defects may be repaired by welding, only with the approval of the Inspecting Authority provided that the plate is stressed relieved after welding where necessary".

6. For regulations 15 and 16 of the said regulations, the following regulation shall be substituted, namely:—

“15. (a) — Tensile test pieces — The tensile strength and percentage elongation shall be determined from test pieces of gauge lengths preferably equal to $LO = 5.65 \sqrt{AO}$ (see regulation 16). Alternatively, other gauge lengths may be used, provided the elongation is expressed as the equivalent value on a gauge length of $5.65 \sqrt{AO}$.

(b) — In arbitration cases, a test piece of gauge length equal to $5.65 \sqrt{AO}$ for rectangular test piece or 5d for round test pieces shall be used. For plate thickness exceeding 60mm test pieces shall be taken from the exterior third of the plate cross section. Wherever practicable, the rolled surface shall be retained on two opposite sides of the test piece.

16. Tensile tests — The tensile strength of different grades of material shall be within the limits specified in regulation 9(d).

(b) — The upper yield point at room temperature shall be not less than 50% of the specified minimum tensile strength at room temperature.

(c) — The breaking elongation in percentage shall be not less than $\frac{N - R_m}{O - O}$

$$\frac{N - R_m}{O - O}$$

Where R_m = tensile strength at room temperature in kgf/mm²

N = a quality index of 100 for plate thickness upto 50 mm or 95 for plate thickness over 50 mm.

C = 2.2 for only gauge lengths of $10 = 5$ do or $LO = 5.65$ do.

where LO = gauge length

do = original diameter of the round test piece.

AO = original cross section of the rectangular test piece.

Note: — $C = 1.9$ for gauge lengths of $4 \sqrt{AO}$ or for test piece in Appendix B.

(d) — The minimum values of the stress at proof limit 0.2% at elevated temperature (E_t) may be calculated by multiplying the minimum specified tensile strength at room temperature (R_{20}) by the value of the ratio (E_t/R_{20}) given in table below: —

TABLE

Minimum values for the ratio of the stress at proof limit 0.2% at elevated temperature (E_t) to the minimum specified tensile strength at room temperature (R_{20}) of carbon steel boiler plates

Temperature	250°C*	275°C	300°C	325°C	350°C	375°C
E_t/R_{20}	0.40	0.38	0.36	0.34	0.33	0.32
Temperature	400°C	425°C				
E_t/R_{20}	0.31	0.30				

*For temperatures lower than 300°C any test required for acceptance purposes (in the absence of records of previous tests at these temperatures) shall be made at 300°C, in which case the proof stress shall be not less than value obtained

by calculation from the specified minimum tensile strength at room temperature and the above proof ratio of 0.36 for 300°C.

7. In regulation 22 of the said regulations, the following paragraph shall be added at the end namely: —

“If the unsatisfactory result of a test is obviously due to technical conditions of the testing method or to a closely limited defect of a test piece, then the failure can be left out of consideration in the decision on the fulfilment of the requirement and another test piece may be substituted.

If the unsatisfactory result of test is due to an unfavourable heat treatment, the plate and the test strip may be heat treated again. Following this, the entire test shall be repeated.”

8. For the heading above regulation 35 of the said regulations, the following heading shall be substituted namely: —

“Copper, Brass and Steel Tubes”.

9. In regulation 35 of the said regulations, after sub-regulation (2); the following sub-regulation shall be inserted, namely: —

“(3) Carbon steel tubes—Tubes of Carbon Steel for boilers and super heaters subject to internal or external pressure shall comply with the requirements of regulations 36 to 42, 43 to 46 or 57 to 63”, as the case may be.”.

10. For regulation 38, 39 and 40 of the said regulations, the following regulations shall be substituted, namely: —

“38. Tensile Strength — (a) The tensile strength of the material cut from finished tubes shall conform to one of the following five grades, namely: —

- (i) 31 to 41 Kg/mm²
- (ii) 36 to 46 Kg/mm²
- (iii) 41 to 51 Kg/mm²
- (iv) 46 to 56 Kg/mm²
- (v) 50 to 62 Kg/mm²

(b) The upper yield point at room temperature shall not be less than 50 per cent of the specified minimum tensile strength at room temperature.

(c) The minimum values of the stress at proof limit 0.2 per cent at elevated temperature (E_t) of the material may be calculated by multiplying the specified minimum tensile strength at room temperature (R_{20}) by the ratio (E_t/R_{20}) given in the table below: —

TABLE

Minimum values for the ratio of the stress at proof limit 0.2 per cent at elevated temperature (E_t) to the minimum specified tensile strength at room temperature (R_{20}) of carbon steel tubes

Temperature	250°C*	275°C	300°C	325°C	350°C	375°C
E_t/R_{20}	0.40	0.38	0.36	0.34	0.33	0.32
Temperature	400°C	425°C				
E_t/R_{20}	0.31	0.30				

* For temperature lower than 300°C, any test required for acceptance purposes (in the absence of records of previous tests at the temperatures) shall be made at 300°C in which

case the proof stress shall be not less than the value obtained by calculation from the specified minimum tensile strength at room temperature and the above ratio of 0.36 for 300°C.

(d) The breaking elongation in % shall be not less than $\frac{100 - R_m}{C}$, where $C = 2.2$ for only gauge

length of

$$L_o = 5d_o \text{ or } 5.65 \sqrt{A_o}$$

d_o = original diameter of the round test piece.

A_o = original cross section of the rectangular test piece.

Note: — 1.9 for gauge lengths of $4 \sqrt{A_o}$ for test piece C in Appendix B.

39. Flattening Test. — A ring not less than 50 mm in length cut from one end of each selected tube shall be flattened between two parallel flat surfaces to a distance between the plates (H) as calculated by the formulae given below without showing any such of a crack or flaw.

$$H = \frac{(1 + C)a}{\frac{C + a}{D}}$$

where

a = thickness of tube (mm)

D = outside diameter of the tube (mm)

C = a constant as given below

$C = 0.09$ for steel having a specified minimum tensile strength from 31 Kgf/mm² upto and including 35 Kgf/mm²

$C = 0.07$ for steel having a specified minimum tensile strength over 35 Kgf/mm² upto and including 42 Kgf/mm².

$C = 0.05$ for steel having a specified minimum tensile strength over 42 Kgf/mm² upto and including 50 Kgf/mm².

$C = 0.03$ for steel having a specified minimum tensile strength over 50 Kgf/mm² upto and including 62 Kgf/mm².

40. Flanging and drift expanding test (a) The tube shall withstand either the flanging test or the drift expanding test, at the option of the manufacturer.

(b) Flanging test. — A test piece cut from the end of a tube in a plane perpendicular to the ends of the tube shall show no crack or flaw after flanging to the specified outside diameter as given in the table below.

(c) Drift expanding test. — A test piece cut from the end of a tube in a plane perpendicular to the axis of the tube shall show no crack after expanding by a mandrel having an included angle of 30°, 45°.

"When the ladle analysis is not available, the analysis of the sample tubes selected at random may be used".

13. In regulation 44 of the said regulations, for clause (a), (b) and (c), the following clauses shall be substituted, namely: —

(a) Tensile strength (1) the tensile strength of the material cut from furnished tubes shall conform to one of the following five grades, namely: —

- (i) 31 to 41 Kgf/mm²
- (ii) 36 to 46 Kgf/mm²
- (iii) 41 to 51 Kgf/mm²
- (iv) 46 to 56 Kgf/mm²
- (v) 50 to 62 Kgf/mm²

The upper yield point at room temperature shall not be less than 50% of the specified minimum tensile strength at room temperature.

(2) The minimum values of the stress at proof limit 0.2% at elevated temperature (E_t) of the material may be calculated by multiplying the specified minimum tensile strength at room temperature (R_{20}) by the ratio (E_t/R_{20}) given in the table below:

TABLE

Minimum values for the ratio of the stress limit 0.2% at elevated temperature (E_t) to the minimum of specified tensile strength at room temperature (R_{20}) of carbon steel tubes

Temperature	250°C*	275°C	300°C	325°C	350°C	375°C
	400°C	425°C				
E_t/R_{20}	0.40	0.38	0.36	0.34	0.33	0.32
	0.31	0.30				

* For temperature lower than 300°C, any test required for acceptance purpose (in the absence of records of previous tests at these temperatures) shall be made at 300°C in which case the proof stress shall be not less than the value obtained by calculation from the specified minimum tensile strength at room temperature and the above ratio of 0.36 for 300°C.

(3) The breaking elongation in % shall be not less than $\frac{100 - R_m}{C}$ where $C = 2.2$ for only gauge

length of $L_o = 5d_o$
or $5.65 \sqrt{A_o}$

d_o = original diameter of the round test piece

A_o = original cross section of the rectangular test piece.

Note = 1.9 for gauge length of $4 \sqrt{A_o}$ or test piece C in Appendix "B"

(b) Flattening test — A ring not less than 50 mm in length cut from one end of each selected tube shall be flattened between two parallel flat surfaces to a distance between the plates (H) as calculated by the formula given below without showing any sign of a crack or flaw:

$$H = \frac{(1 + C)a}{\frac{C + a}{D}}$$

Where

a = thickness of the tube (mm)

D — outside diameter of the tube (mm)

C = a constant as given below

C = 0.09 for steel having a specified minimum tensile strength from 31 kgf/mm² upto including 35 kgf/mm².

C = 0.07 for steel having a specified minimum tensile strength over 35 kgf/mm² upto and including 42 kgf/mm².

C = 0.05 for steel having a specified minimum tensile strength over 42 kgf/mm² upto and including 50 kgf/mm².

C = 0.03 for steel having a specified minimum tensile strength over 50 kgf/mm² upto and including 62 kgf/mm².

(c) Flanging and drift expanding tests — The tube shall withstand either the flanging test or the drift expanding test, at the option of the manufacturer.

(i) Flanging test — A test piece cut from the end of the tube in a plane perpendicular to the axis of the tube shall show no crack or flaw after flanging to the specified outside diameter as given in the table below.

(ii) Drift expanding test — A test piece cut from the end of a tube in a plane perpendicular to the axis of the tube shall show no crack after expanding by a mandrel having an included angle of 30°, 45° or 60°, at the option of the manufacturer to increase the outside diameter as given in the table below:

TABLE

Minimum increase of outside diameter of tubes in flanging and drift expanding test

Type of test	Minimum specified tensile strength(s)	Outside diameter (D) of the tube	Increase of outside diameter of the tube
	Kgf/mm ² A: D < 63.5mm B: < D < 63.5mm 150mm		%
Flanging test S	<42	A	17
		B	11
	S <42	A	14
		B	8
Drift expanding test	A		17
	B		11

14. For regulation 46 of the said regulations, the following regulation shall be substituted, namely: —

“46 Hydraulic Test. Each tube shall be tested at the Makers Works on completion of manufacture and shall withstand a hydraulic pressure, to one and a half times the design pressure subject to a minimum of 0.70 kgf/mm² but not greater than the pressure calculated by the following formula

$$P = \frac{2 St}{D}$$

Where

P = test pressure

D = outside diameter of the tube

T = nominal wall thickness of the tube

S = Stress, which shall be taken as 40% of the minimum tensile strength at room temperature.

15. For regulation 51 of the said Regulations, the following regulation shall be substituted: —

“51. Hydraulic test — Each tube shall be tested at the Makers Works on completion of manufacture and shall withstand a hydraulic pressure, to one and a half times the design pressure subject to a minimum of 0.70 Kgf/mm² but not greater than the pressure calculated by the following formula

$$P = \frac{2 st}{D}$$

Where

P = test pressure

D = outside diameter of the tube.

t = nominal wall thickness of the tube.

S = stress which shall be taken as 40% of the minimum tensile strength at room temperature.”

16. In regulation 59 of the said regulations, for clause (b), the following clause shall be substituted, namely: —

“(b) Flanging and drift expanding test (i). The tube shall withstand either the flanging test or the drift expanding test at the option of the manufacturer.

(ii) Flanging test — A test piece cut from the end of a tube in a plane perpendicular to the axis of the tube shall show no crack or flaw after flanging to the specified outside diameter as given in the table below.

(iii) Drift expanding test — A test piece cut from the end of a tube in a plane perpendicular to the axis of the tube shall show no crack after expanding by a mandrel having an included angle of 30°, 45° or 60°, at the option of the manufacturer to increase the outside diameter as given in the table below.

TABLE

Minimum increase of outside diameter of tube in flanging and drift expanding test

Type of test	Minimum specified tensile strength(s)	Outside diameter (D) of the tube	Increase of outside diameter of the tube
	Kgf/mm ² A: D < 63.5mm B: 63.5 < D < 150 mm		%
Flanging test	S <42	A	17
		B	11
	S >42	A	14
		B	8
Drift expanding test	A		17
	B		11

17. For regulations 60 and 61 of the said regulations, the following regulations shall be substituted, namely: —

“60. Tensile Strength — (a) The tensile strength of the material cut from the finished

tubes shall conform to one of the following four grades: —

- i) 31 to 41 Kgf/mm²
- ii) 36 to 46 Kgf/mm²
- iii) 41 to 51 Kgf/mm²
- iv) 46 to 56 Kgf/mm²

(b) The upper yield point at room temperature shall not be less than 50% of the specified minimum tensile strength at room temperature.

(c) The minimum values of the stress at proof 0.2% at elevated temperature (Et) of the material may be calculated by multiplying the specified minimum tensile strength at room temperature (R20) by the ratio Et/R20 given in the table below.

TABLE

Minimum values for the ratio of the stress at proof limit 0.2% at elevated temperature (Et) to the minimum specified tensile strength at room temperature (R20) of carbon steel tubes

Temperature	250°C*	275°C*	300°C	325°C	350°C	375°C	400°C	425°C
Et/R ₂₀	0.40	0.38	0.36	0.34	0.33	0.32	0.31	0.30

* For temperature lower than 300°C, any test required for acceptance purposes (in the absence of records of previous tests at these temperatures) shall be made 300°C in which case the proof stress shall be not less than the value obtained by calculation for the specified minimum tensile strength at room temperature and the above ratio 0.36 for 300°C.

(d) The breaking elongation in % shall be not less than 100-R^m

C

where

C = 2.2 for only gauge lengths of L₀ — 5d₀
or 5.65 √A₀

d₀ = Original diameter of the round test piece.

A₀ = Original cross section of the rectangular test piece.

Note: 1.9 for guage lengths of 4 √A₀ or for test piece C in Appendix B.

61. Hydraulic test — Each tube shall be tested at the Makers Work on completion of manufacture and shall withstand a hydraulic pressure to one and half times the design pressure subject to a minimum of 0.70 Kgf/mm² by the following formula

$$P = \frac{2st}{D}$$

P = test pressure

D = outside diameter of the tube

t = nominal wall thickness of the tube

s = stress which shall be taken as 40% of the minimum tensile strength at room temperature.”.

18. For regulation 73 of the said regulations, the following regulation shall be substituted namely: —

“73. Scope (a) This regulation shall cover carbon steel castings used in the construction of boilers and steam pipes including their fittings.

(b) For all types of steel castings conforming to these regulations only the maximum values shall for tensile strength are fixed. The minimum values shall be between 40 and 50 Kgf/mm²”.

19. In regulation 74 of the said regulations, for clauses (a) and (b), the following clauses shall be substituted, namely: —

“(a) Process of manufacture.—The steel used for castings shall be made by the open hearth or electric furnace or any other process which gives steel having equivalent properties.

(b) Chemical analysis.—The ladle analysis shall conform to the following requirements, namely: —

Carbon	0.25%*	Maximum
Silicon	0.60%	Maximum
Manganese	1.40%	Maximum
Phosphorous	0.05%	Maximum
Sulphur	0.05%	Maximum

* A carbon content not exceeding 0.30% may be subject to the agreement between the boiler maker and the Inspecting Authority”.

20. In regulation 74 of the said regulations, clause (e) shall be omitted.

21. For regulation 75 of the said regulations, the following regulation shall be substituted, namely: —

“75. Freedom from and rectification of defects — The steel Castings shall have clean surfaces and shall be free from injurious defects. The specified permissible variations in size or thickness shall not be exceeded. Defects may be repaired by welding only, with the approval of the Inspecting Authority provided that the castings are stress — relieved after welding where necessary”.

22. For regulation 77 of the said regulations, the following regulation shall be substituted, namely: —

“77. Tensile Tests: (a) The Upper yield point at room temperature shall be not less than 50% of the specified minimum tensile strength at room temperature.

(b) A proportional test piece with L₀ — 5d₀ shall be used as tests specimens.

(c) The minimum values of stress at proof limit 0.2% at elevated temperature (Et) of the material may be calculated by multiplying the minimum specified tensile strength at room temperature (R20) by the value of ratio Et/R20 given in table under regulation 16.

(d) The breaking elongation in % shall be not less than 93 — R_m

$$\frac{2.2}{93}$$

where

R_m = measured tensile strength at room temperature in Kgf/mm²

93 = a quality index

2.2 = a constant which is valid only when L₀ = 5d₀

where

L₀ = gauge length

d₀ = original diameter of the round test piece.

(e) If, however, the tensile tests are carried out on specimens conforming to any other standards, the material will be accepted provided the tensile strength and elongation computed on the basis of the dimensions of the test pieces under the regulation shall conform to the above requirements".

23. In the heading above regulation 81 of the said regulations for the words "STEEL FORGINGS AND SOLID DRAWN HEADERS", the words "FORGED OR ROLLED PRESSURE PARTS OTHER THAN SEAMLESS DRUMS OF CARBON STEEL" shall be substituted.

24. In regulation 81 of the said regulations (i) for clause (a), the following clause shall be substituted, namely: —

"(a) *Process of manufacture.*— The steel used for the parts shall be made by the open hearth or electric or basic oxygen process or by any other process which gives steel having equivalent properties.";

(ii) for clause (c), the following clause shall be substituted, namely: —

"(c) *Freedom from and rectification of defects.*— Where not machined, the pieces, shall have workman like surfaces as normally obtained by rolling, forging or drawing. Provided that the minimum required thickness is maintained, minor surface effects may be admitted and other defects removed by mechanical means so as to achieve a smooth surface. Surface defects may also be repaired, by welding only, with the approval of the inspecting Authority provided that the parts are stress relieved after welding where necessary."

25. For regulation 82 and 83 of the said regulations, the following regulations shall be substituted, namely: —

"82. *Selection of test pieces.*— (a) for testing, either the parts themselves shall be used or additional material of sufficient size for test pieces shall be available. In the case of headers, for example surplus lengths for test rings, may be used. In the case of flanges swaged in dies, the punchings left may be used as test pieces, in which case the identity of the material of the punching with that of the flanges shall be evidenced in an adequate manner. The test may be performed also on the semi-finished material for example a bar or a billet, provided it is given approximately the same reduction and heat-treatment as the finished forgings. For headers with closed ends, the test rings shall be cut off before dishing or reducing and shall be subjected to the same heat treatment as the headers themselves. In the case of headers, which are closed by special covers, the test ring shall be cut off after heat — treatment. Similar procedure shall be followed for test pieces of other forgings."

(b) for testing, piece of one and the same cast of the same heat treatment batch as well as of similar dimensions may be gathered into one group. At least one test piece shall be made from each group.

(c) A proportional test piece with $L_0=5d_0$ shall be used as a test specimen.

(d) Tangential test piece shall be used for headers where practicable. For headers with outside diameter less than 200 mm, longitudinal test pieces may be allowed.

(e) *Hydraulic Test.*— A hydraulic test shall be carried out at the Maker's works in accordance with the requirements of regulation 268, if required by the Inspecting Authority.

83. *Tensile Strength.* (a) The tensile strength of the material shall conform to one of the following four grades: —

- (i) 37 to 45 Kgf/mm²
- (ii) 42 to 50 Kgf/mm²
- (iii) 47 to 56 Kgf/mm²
- (iv) 52 to 62 Kgf/mm²

(b) The upper yield point at room temperature shall be not less than 50% of the specified minimum tensile strength.

(c) The minimum values of the stress at proof limit 0.2% at elevated temperature (Et) of the material may be calculated by multiplying the minimum specified tensile strength at room temperature (R20) by the value of the ratio Et/R20 given in the table under Regulation 16.

(d) The breaking elongation in % shall not be less than $\frac{93-R_m}{2.2}$

where

R_m = measured tensile strength at room temperature in Kgf/mm²

93 = quality index

2.2 = a constant which is valid only when $L_0 = 5d_0$

Where

L_0 = gauge length

d_0 = original diameter of the round test piece."

26. For regulation 235 of the said regulations, the following regulation shall be substituted, namely: —

"235. *Manufacture.*— (a) Carbon Steel for Seamless Forged Drums shall be made by the open-hearth or electric furnace or basic oxygen process or any other process which gives steel having equivalent properties.

(b) Forging which may have integral ends, ends closed by means of dished plates, open ends for multi-joints drums or any combination of these shall be made from solid case ingot which is punched, bored or trepanned, or from a bellow cast ingot and shall comply entirely with the relevant requirements of Chapter II."

27. In regulation 237 of the said regulations, the following paragraph shall be added at the end, namely: —

"Where not machined, the forgings shall be workman like surfaces as normally obtained by not working. Provided that the minimum specified thickness is maintained, minor surface defects may be admitted and other defects removed by mechanical means so as to achieve a smooth surface. Surface defects may be repaired by welding only, with the approval of the Ins-

pecting Authority provided that the drum is stress relieved after welding where necessary."

28. In regulation 240 of the said regulations (i) for clause (b), the following clause shall be substituted, namely:—

"(b) Tensile test pieces.—The tensile strength and percentage elongation shall be determined from round test pieces with gauge lengths of 5 d_0 ."

(ii) for clause (c), the following clause shall be substituted namely:—

"(c) Tensile Test.—(i) The tensile strength and percentage elongation shall be in accordance with the requirements of regulations 9 and 16.

(ii) The upper yield point at room temperature shall be not less than 50% of the specified minimum tensile strength at room temperature. The minimum values of the stress at proof 0.2% at elevated temperature (E_t) of the material may be calculated by multiplying the minimum specified tensile strength at room temperature (R_{20}) by the value of the ratio (E_t/R_{20}) given in the table under regulation 16.

(iii) The breaking elongation in per cent shall be not less than $100 - R_m$

2.2

where

R = tensile strength at room temperature in Kgf/mm^2 .

100 = quality index

2.2 = a constant which is valid only when $L_0 = 5d_0$

where,

L_0 = gauge length

d_0 = original diameter of round test piece".

29. For regulation 243 of the said regulations, the following regulation shall be substituted, namely:—

"243. Tolerances.—(a) The deviation from circularity in any section shall, in the case of normalised drums, not exceed 2% and in the case of stress relieved drums 1%. The deviation from a straight line shall not exceed 0.3% of the cylindrical length.

(b) In order to determine the deviation from circularity of the drums the maximum and minimum internal diameter at one cross section shall be measured. From these measured values the percentage deviation from circularity shall be calculated according to the following formula:—

$$C = \frac{2 (d_{\max} - d_{\min})}{d_{\max} + d_{\min}} \times 100$$

where

C = percentage deviation from circularity of the drums.

d = internal diameter at one cross-section.

In order to determine the deviation from a straight line, a stretched line should be placed longitudinally against the sides and its largest distance from the shell line concerned shall be measured. From this distance, and from the length of the cylindrical shell, the deviation from the straight line shall be calculated."

30. In regulation 282 of the said regulations, for clause (b) and (c) the following clauses shall be substituted namely:—

"(b) Limits of Cast Iron — Cast Iron shall not be used for:

- (i) Temperature above 220°C
- (ii) Pressure exceeding 13 kgf/cm^2
- (iii) Blow down fittings.
- (iv) For parts with an internal diameter exceeding 200 mm.

(c) Limits of Bronze Fittings — Bronze shall not be used for steam temperatures exceeding 220°C except where approval by the Inspecting Authority has been obtained in cases of special alloys for high temperature."

No. 2(4)/70-Boilers.

Sd/-

(S. C. DEY)

Secretary, Central Boilers Board.